

Incidence of Tin (Sn) content in canned fish, and the aftermath release of Tin in opened cans.

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Abstract

The study was carried out to determine the tin concentration in canned fish (Mackerels in brine solutions) in order to check whether the tin content was within the legal limit (250 ppm) set by SLSI and to determine whether there was any increment of tin content during the open storage in refrigerator. Medium size cans (425 g) of three different brands, with the sample size of six in each brand, were analyzed for tin using spectrophotometer after developing a coloured compound combining with toluene-3,4-dithiole. One brand out of three was selected and tin concentrations were measured in different time intervals (0 hrs, 6 hrs, 12 hrs, 24 hrs) during open storage at refrigerated condition. Three samples were analyzed for the each time duration. The mean tin concentration of canned fish, i.e. 2.45 mg/kg (fresh weight basis), was far below the legal limit. Distribution of tin in liquid and solid fraction was not significantly different where the average tin concentrations in liquid and solid fractions were 2.728 mg/kg and 2.006 mg/kg respectively. Tin concentration increased significantly ($P \leq 0.05$) during the refrigerated storage after opening the can, and there was a linear relationship between storage time and the tin concentration during the test time having the following formula.

$$\text{Tin content in ppm} = 0.0392 \times t + 1.698$$

t = time in hours

$$R^2 = 0.7587$$

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